## AMENDMENTS TO THE CLAIMS

Listing of Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

1. (Currently Amended) A process for the synthesis of a bead-shaped, cross-linked, hydrophilic copolymer, comprising:

radically polymerizing a monomer phase, in a bead polymerization process, in the presence of a polymerization initiator and a protective colloid,

the monomer phase comprising:

monomers, and

a diluent,

the monomer phase being present during the polymerization in dispersed form as droplets in a dispersion medium comprising an organic solvent selected from the group consisting of aliphatic hydrocarbons with 5 to 7 carbon atoms;

to thereby obtain said bead-shaped, cross-linked, hydrophilic copolymer, the copolymer having a binding activity toward ligands containing nucleophilic groups,

wherein said monomer phase comprises as monomers

a) 5 to 40 wt% of hydrophilic monomers which contain a vinyl group, said hydrophilic monomers being capable of radical polymerization, and being capable of forming at least 10% aqueous solutions at room temperature,

b) 30 to 50 wt% of monomers which contain a vinyl group and an additional functional group, said monomers being capable of radical polymerization and being capable

of forming at least one covalent bond in a reaction with at least one nucleophilic group of a ligand, and

c) 20 to 60 wt% of cross-linking monomers which contain two or more ethylenically unsaturated polymerizable groups, said cross-linking monomers being capable of radical polymerization,

wherein a), b) and c) add up to 100 wt%,

wherein said monomer phase comprises as diluent a mixture of methanol and water in the ratio of 1:1.0 to 1:4.0,

wherein a ratio of monomer phase to dispersion medium ranges from 1:2.0 to 1:4.0, and

wherein a ratio of monomers to diluent ranges from 1:1.7 to 1:2.4.

2. (Previously Presented) The process according to Claim 1, wherein said monomers are

a) acrylamide, methacrylamide or mixtures thereof,

b) glycidyl methacrylate, allyl glycidyl ether or mixtures thereof,

c) methylenebisacrylamide or methylenebismethacrylamide.

3. (Previously Presented) The process according to Claim 1, wherein said organic solvent is cyclohexane.

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4. (Previously Presented) A support polymer material obtained by the process

according to Claim 1, said support polymer having a binding capacity for penicillin amidase from *E. coli* of at least 220 U/g moist, based on a reaction of 1530 units of penicillin amidase with 1 g of said support polymer material, and

said support polymer having a swelling factor of at most 1.5.

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5. (Previously Presented) A method of binding proteins, comprising:

contacting the support polymer material according to Claim 12 with at least one protein.

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6. (Previously Presented) A method of binding enzymes, comprising:

contacting the support polymer material according to Claim 12 with at least one enzyme.

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7. (Previously Presented) A method of binding antibodies, comprising:

contacting the support polymer material according to Claim 12 with at least one antibody.

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8. (Previously Presented) A method of chromatography, comprising:

contacting the support polymer material according to Claim 12 with at least one compound.

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9. (Previously Presented) A method for synthesis of pharmaceuticals, comprising:

synthezising a pharmaceutical in the presence of the support polymer material according to claim 12.

18. (Previously Presented) A method for stereospecific synthesis of chiral substances, comprising:

synthezising a chiral substance in the presence of the support polymer material according to claim 12.

4. (Previously Presented) The process according to Claim 1, wherein said monomer a) is a methacrylamide.

5. (Previously Presented) The process according to Claim 1, wherein said functional group of monomer b) is an oxirane group.

6. (Previously Presented) The process according to Claim 1, wherein said ligand of said nucleophilic group is an oxirane group.

7. (Previously Presented) The process according to Claim 1, wherein said monomer c) is N, N'-methylenebismethacrylamide.

8. (Currently Amended) The process according to Claim 1, wherein said ratio of monomers to diluent is from 1:1.9 to 1:2.1.

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16. (Previously Presented) The process according to Claim 1, wherein said ratio of monomer phase to dispersion medium is from 1:2.8 to 1:3.3.

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17. (Previously Presented) The process according to Claim 1, wherein said protective colloid is a copolymer comprising 95 parts of n-butyl methacrylate and 5 parts of 2-trimethylammoniumethyl methacrylate chloride having a weight average molecular weight of from 30,000 to 80,000.

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18. (Previously Presented) The process according to Claim 1, wherein said copolymer has a size of from 50 to 500$\mu$m.

19. (Currently Amended) A method of covalently binding of a ligand, comprising:

contacting the support polymer material according to Claim ~~4~~ 12 with a ligand <u>to covalently bind the ligand to the support polymer material</u>;

wherein said support polymer material has an oxirane group.

20. (Currently Amended) A <u>support</u> polymer ~~beads~~ <u>material</u> loaded with a ligand and obtained by the method according to Claim 19.

21. (Canceled)